

What is claimed is:

1 1. An apparatus for testing the junction strength
2 of a solder ball formed on an electrode of a first-sized
3 substrate or a second-sized substrate, comprising:

4 a removable platform, securing the first-sized
5 substrate;

6 a vacuum chuck, securing one of the second-sized
7 substrate or the removable platform;

8 a moving module;

9 a probe, fixed on the moving module;

10 a control module, controlling the moving module to
11 shift the probe to contact the solder ball and
12 move the probe in a direction to separate the
13 solder ball from the second-sized substrate
14 secured on the vacuum chuck or the solder ball
15 from the first-sized substrate on the removable
16 platform when the removable platform is fixed
17 on the vacuum chuck; and

18 a sensor, measuring the pulling force exerted on the
19 probe when the probe is moved in a direction
20 and separates the solder ball from the first-
21 sized substrate or the second-sized substrate.

1 2. The apparatus as claimed in claim 1, further
2 comprising:

3 heating means for heating the probe.

1 3. The apparatus as claimed in claim 1, wherein
2 the vacuum chuck has a plurality of aligning holes, and
3 the removable platform has a plurality of aligning pins

4 which are inserted in the aligning holes to position the
5 removable platform on the vacuum chuck.

1 4. The apparatus as claimed in claim 1, wherein
2 the removable platform has a plurality of first pins to
3 position the first-sized substrate.

1 5. The apparatus as claimed in claim 1, wherein
2 the vacuum chuck has a plurality of second pins to
3 position the second-sized substrate or the removable
4 platform.

1 6. The apparatus as claimed in claim 1, further
2 comprising a vacuum pump.

1 7. The apparatus as claimed in claim 6, wherein
2 the vacuum chuck has a plurality of annularly arranged
3 recesses and gas-exhausting holes communicated with the
4 vacuum pump, wherein the vacuum pump forms a vacuum
5 therein to secure the second-sized substrate or the
6 removable platform.

1 8. The apparatus as claimed in claim 6, wherein
2 the removable platform includes a base part and a moving
3 part pivotally connected thereon.

1 9. The apparatus as claimed in claim 7, wherein
2 the moving part has a central recess and a central hole,
3 and when the removable platform is positioned on the
4 vacuum chuck, the central recess and the central hole are
5 communicated with the vacuum pump through the annularly
6 arranged recesses and the gas-exhausting holes of the
7 vacuum chuck, wherein the vacuum pump forms a vacuum
8 therein to secure the first-sized substrate.

1 10. The apparatus as claimed in claim 6, wherein
2 the base part of the removable platform has a locking
3 recess and a passage communicated with the vacuum pump to
4 fix the position of the moving part.

1 11. An apparatus for testing the junction strength
2 of a solder ball formed on an electrode of an 8" wafer or
3 a 12" wafer, comprising:

4 a removable platform, securing the 8" wafer;
5 a vacuum chuck, securing a 12" wafer or the
6 removable platform;
7 a moving module;
8 a probe, fixed on the moving module;
9 a control module, controlling the moving module to
10 shift the probe to contact the solder ball and
11 move the probe in a direction to separate the
12 solder ball from the second-sized substrate
13 secured on the vacuum chuck or the solder ball
14 from the 8" wafer on the removable platform
15 when the removable platform is fixed on the
16 vacuum chuck; and
17 a sensor, measuring the pulling force exerted on the
18 probe when the probe is moved in a direction
19 and separates the solder ball from the 12"
20 wafer or the 8" wafer.

1 12. The apparatus as claimed in claim 11, further
2 comprising:

3 heating means for heating the probe.

1 13. The apparatus as claimed in claim 11, wherein
2 the vacuum chuck has a plurality of aligning holes, and
3 the removable platform has a plurality of aligning pins
4 which are inserted in the aligning holes to position the
5 removable platform on the vacuum chuck.

1 14. The apparatus as claimed in claim 11, wherein
2 the removable platform has a plurality of first pins to
3 position the 8" wafer.

1 15. The apparatus as claimed in claim 11, wherein
2 the vacuum chuck has a plurality of second pins to
3 position the 12" wafer or the removable platform .

1 16. The apparatus as claimed in claim 11, further
2 comprising a vacuum pump.

1 17. The apparatus as claimed in claim 16, wherein
2 the vacuum chuck has a plurality of annularly arranged
3 recesses and gas-exhausting holes communicated with the
4 vacuum pump, wherein the vacuum pump forms a vacuum
5 therein to secure the 12" wafer or the removable
6 platform.

1 18. The apparatus as claimed in claim 16, wherein
2 the removable platform includes a base part and a moving
3 part pivoted thereon.

1 19. The apparatus as claimed in claim 17, wherein
2 the moving part has a central recess and a central hole,
3 and when the removable platform is positioned on the
4 vacuum chuck, the central recess and the central hole are
5 communicated with the vacuum pump through the annularly

6 arranged recesses and the gas-exhausting holes of the
7 vacuum chuck, wherein the vacuum pump forms a vacuum
8 therein to secure the 8" wafer.

1 20. The apparatus as claimed in claim 16, wherein
2 the base part of the removable platform has a locking
3 recess and a passage communicated with the vacuum pump to
4 fix the position of the moving part.